

5 **A Periodic Interleaved Star with Vias Electromagnetic
 Bandgap Structure for Microstrip and Flip Chip
 On Board Applications**

Background of the Invention

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0110-05 This application is a continuation-in-part of parent application titled "Improved
~~Flip-Chip MMIC on Board Performance Using Periodic Electromagnetic Bandgap~~
~~Structures~~" filed 2004, serial number

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Field of invention

 This invention is in the field of cross - talk suppression in a hybrid assembly at
microwave frequencies.

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Description of the Related Art

 Monolithic Integrated Circuits (MMIC), an example of a semiconductor struc-
ture, support many of the present generation of military and commercial radio fre-
25 quency sensors and communication applications. MMICs include active devices, such
as field effect transistors and bipolar transistors, passive elements such as capaci-
tors, thin film / bulk resistors, and inductors integrated on a single semi-insulating
substrate, such as Gallium Arsenide.

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 Hybrid technology relates to methods used for interconnecting a plurality of
separate semiconductor structures, such as MMICs, to a host substrate, in single,
or multi-layer configurations. In a hybrid, inter-connections between the semicon-
ductor structures is sometimes along the surface of the host substrate. These inter-
connections are frequently made using metallized paths connected to bumps (soft
35 solder, or hard plated bumps). These bumps, located on the surface of the substrate,
engage conductive pads on the semiconductor structures thus forming conductive,
interconnecting paths between the host substrate and the semiconductor structures.